Measure the amount of pollution (not the effects)

Pollution 2

5.2.1 Describe two direct methods of monitoring pollution

→Soil → Assess a group of soil characteristics (soil texture, pH, density, infiltration, water holding, organic content, Nitrogen, Phosphorus, Potassium, MicroBial Content, & Respiration)

→ Also can check for specific contaminents like lead or cadmium

→Water (see notes called "water tests")

↳ Chemical (N or P content, pH, ammonia, Contaminents)

↳ Physical (Turbidity, Clarity, Conductivity, etc)

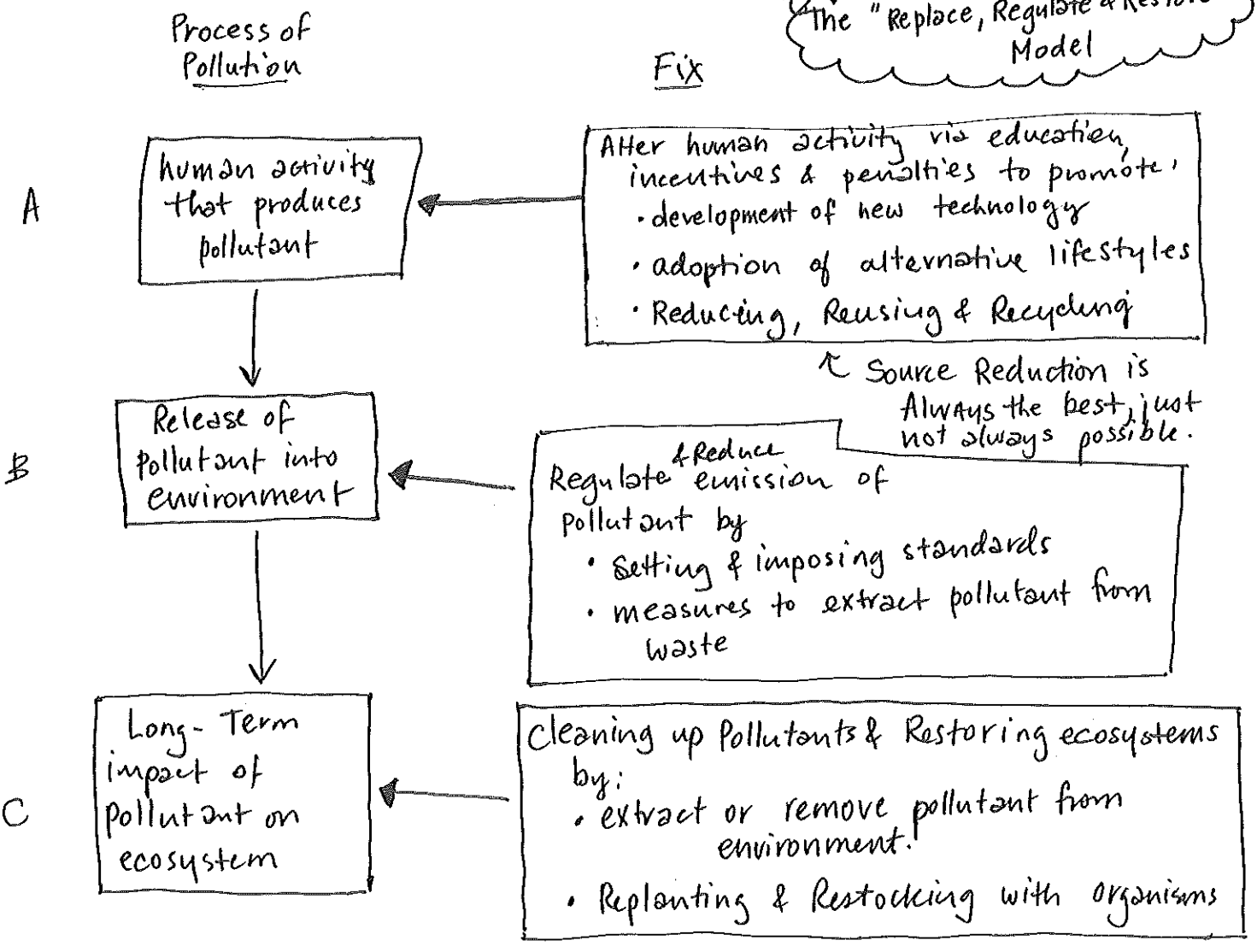
→Air - → Smog

↳ Chemical (SO_x, NO_x, ozone, VOCs; CO_2, CO, CH_4)

↳ Particulates, Acid Precipitation

5.3.1 Outline approaches to pollution management with respect to figure 5

The "Replace, Regulate & Restore" Model



A. Changing Human Activities

+ ↑ Can prevent pollution bf. it happens
  ex. don't use fossil fuels - use solar or wind pwr.
- ↑ limitations: new technologies are expensive & only work in certain environments.
+ ↑ Reusing & Recycling mean using less raw materials & can reduce a societies' ecological footprint.
- ↑ limitations to Reusing & Recycling - Not all materials can be reused or recycled (due to material content, lamination of materials, & efficiency/cost of the necessary processes)

B. Regulate & Reduce Emissions

+ ↑ Put in place measures to extract pollutants from waste ex. Scrubbers in coal power plants catch SO_x & particulates
- ↑ Treatments are often expensive & difficult to Regulate.

C. Cleaning up After the Fact

↑ most expensive option!

↑ Examples of cleanup:

Phytoremediation - clean up via plants

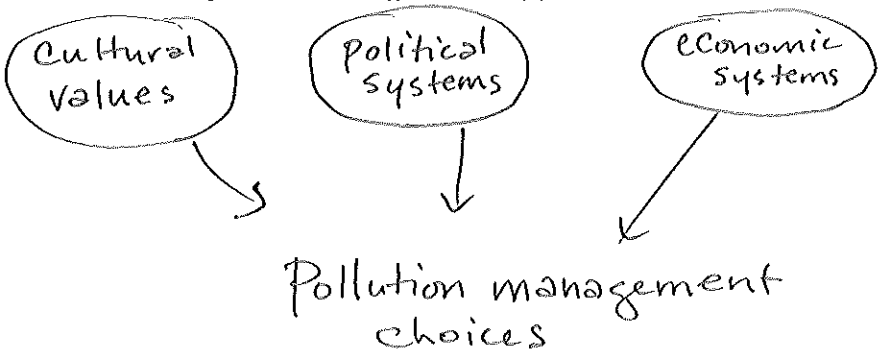
Mycoremediation - clean up using fungi

Bioremediation - clean up using bacteria

All VERY expensive & Sometimes impossible to completly clean

But what do you do with the substrate (soil, water) once it has been remediated?

5.3. *Discuss human factors that affect the approaches to pollution management*



5.3. *Evaluate the costs and benefits to society of the WHO's ban on the use of the pesticide DDT*

History / PROS of DDT: • Controlled lice (& thus typhus) & mosquitoes in WWII
• Insecticide in farming → part of green revolution
• 1950's - WHO used DDT to eradicate Malaria worldwide

↓ led to lots of use

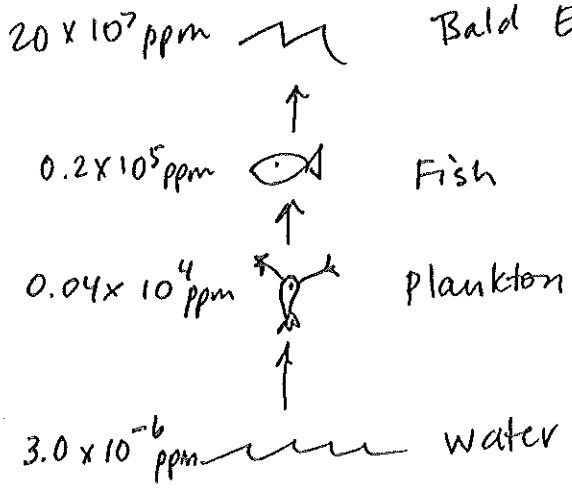
↓ led to resistance of insects to DDT

NOW
Still made & used in India, China & N. Korea

Restriction by WHO: 1970's & 1980's DDT use banned in most MEDC countries.

Restriction by Stockholm Convention: 98 countries agreed to stop using DDT & other "persistant organic pollutants"

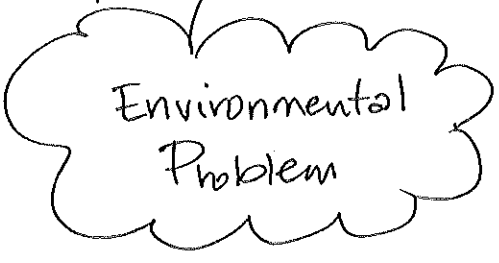
↓ Why? persistant pollutants.



"POPs" → Chemicals that stick around ecosystems long after 1st use
↓
Bioaccumulate & Biomagnification

(see notes over Biomagnification & Bioaccumulation)

DDT = Thinner bird's shells



Problems with Human Health

Widely disputed BUT likely:

- ↑ asthma &/or diabetes
- ↑ risk of liver, breast, & pancreatic cancer.
- early pregnancy loss, premature birth, & low birth weight
- ↑ infertility

ON THE OTHER HAND - 250 million cases of malaria/yr.

(90% in Africa)